

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently amended) A method for determining whether a test compound is a candidate SKN-1-mediated oxidative stress response-activating compound, comprising:

(a) providing a first nematode capable of expressing a SKN-1 polypeptide and containing at least one transgene comprising:

- (i) an oxidative stress resistance gene promoter operably linked to
- (ii) a reporter gene; [[and]]

(b) contacting the first nematode with the test compound; and

(c) determining whether expression of the transgene is increased, wherein an increase in expression of the transgene indicates that the test compound is a candidate SKN-1-mediated oxidative stress response-activating compound.

2. (Original) The method of claim 1, further comprising determining whether the candidate compound is an inhibitor of GSK-3.

3. (Original) A method for determining whether a test compound is a candidate SKN-1-mediated oxidative stress response-inhibiting compound, comprising:

(a) providing a first nematode capable of expressing a SKN-1 polypeptide and containing at least one transgene comprising:

- (i) an oxidative stress resistance gene promoter operably linked to
- (ii) a reporter gene;

(b) contacting the first nematode with the test compound;

(c) before, during, or after step (b), subjecting the nematode to conditions that activate the SKN-1-mediated oxidative stress response in the absence of the test compound; and

(d) determining whether expression of the transgene is decreased or unchanged, wherein decreased or unchanged expression of the transgene indicates that the test compound is a candidate SKN-1-mediated oxidative stress response-inhibiting compound.

4. (Original) The method of claim 3, further comprising determining whether the candidate compound is an inhibitor of SKN-1.

5. (Original) A method for determining whether a test compound is a candidate SKN-1-mediated oxidative stress response-activating compound, comprising:

(a) providing a first nematode containing a transgene encoding a SKN-1 fusion protein, wherein the transgene comprises:

- (i) a SKN-1 DNA operably linked to
- (ii) a reporter gene;

(b) contacting the first nematode with the test compound; and

(c) determining whether the SKN-1 fusion protein accumulates in nuclei in the first nematode, wherein increased accumulation indicates that the test compound is a candidate SKN-1-mediated oxidative stress response-activating compound.

6. (Original) The method of claim 5, further comprising determining whether the candidate compound is an inhibitor of GSK-3.

7. (Original) A method for determining whether a test compound is a candidate SKN-1-mediated oxidative stress response-inhibiting compound, comprising:

(a) providing a first nematode containing a transgene encoding a SKN-1 fusion protein, wherein the transgene comprises:

- (i) a SKN-1 DNA operably linked to
- (ii) a reporter gene;

(b) contacting the first nematode with the test compound;

(c) before or during step (b), subjecting the first nematode to conditions that activate the SKN-1-mediated oxidative stress response in the absence of the test compound; and

(d) determining whether the SKN-1 fusion protein accumulates in nuclei in the first nematode, wherein decreased or unchanged accumulation of the transgene indicates that the test compound is a candidate SKN-1-mediated oxidative stress response-inhibiting compound.

8. (Original) The method of claim 7, further comprising determining whether the candidate compound is an inhibitor of SKN-1.

9. (Currently amended) The method of claim 1 [[or 5]], further comprising the step of:

(d) providing a second nematode, not contacted with the candidate compound to determine whether the candidate compound increases oxidative stress resistance in the first nematode, relative to the oxidative stress resistance of the second nematode, wherein a candidate compound that increases oxidative stress resistance in the first nematode relative to the second nematode is an oxidative stress response-activating agent.

10. (Currently amended) The method of claim 3 [[or 7]], further comprising the step of:

(e) providing a second nematode not contacted with the candidate compound to determine whether the candidate compound decreases oxidative stress resistance in the first nematode, relative to the oxidative stress resistance of the second nematode, wherein a candidate compound that decreases oxidative stress resistance in the first nematode relative to the second nematode is an oxidative stress response-inhibiting agent.

11. (Currently amended) The method of claim 1 [[or 3]], wherein the promoter is a promoter of a gene encoding a protein selected from the group consisting of: γ -glutamine cysteine synthase heavy chain, glutathione synthetase, NADH quinone oxidoreductase, superoxide dismutase, catalase, and glutathione S-transferase.

12. (Currently amended) The method of claim 1, ~~3, 5, or 7~~, wherein the reporter gene is a gene encoding a protein selected from the group consisting of: green fluorescent protein, chloramphenicol acetyl transferase, β glucuronidase, and luciferase.

13. (Currently amended) The method of claim 1 [[or 3]], wherein the nematode in step (a) is *Caenorhabditis elegans*.

14. (Currently amended) The method of claim 5 [[or 7]], wherein the nematode in step (a) is *Caenorhabditis elegans*.

15. (Currently amended) A compound capable of activating a SKN-1-mediated oxidative stress response isolated by the method of claim 1 [[or 5]].

16. (Currently amended) A compound capable of inhibiting a SKN-1-mediated oxidative stress response isolated by the method of claim 3 [[or 7]].

17. (Original) An oxidative stress response-activating agent isolated by the method of claim 9.

18. (Original) An oxidative stress response-inhibiting agent isolated by the method of claim 10.

19-26. (Cancelled)

27. (Original) A fusion protein comprising a SKN-1 polypeptide fused to a heterologous amino acid sequence.

28. (Original) The fusion protein of claim 27, wherein the SKN-1 polypeptide comprises all or a biologically active fragment of SEQ ID NO:1.

29. (Original) The fusion protein of claim 28, wherein the heterologous amino acid sequence is a reporter protein.

30. (Original) A nucleic acid comprising a nucleotide sequence encoding the fusion protein of claim 27.

31. (Original) A vector comprising the nucleic acid of claim 30.

32. (Original) A cell comprising the vector of claim 31.

33. (Currently amended) A transgenic nematode, one or more of whose cells comprise a transgene encoding a fusion protein comprising a polypeptide selected from the group consisting of a SKN-1 polypeptide, a GCS-1 polypeptide, and a GSK-3 polypeptide, fused to a heterologous amino acid sequence, wherein the transgene is expressed in one or more cells of the transgenic nematode.

34. (Original) The transgenic nematode of claim 33, wherein the transgene comprises a *skn-1::gfp* transgene.

35. (Cancelled)

Applicant : T. Keith Blackwell
Serial No. : Not yet assigned
Filed : Herewith
Page : 8 of 9

Attorney's Docket No.: 10276-093US1

36. (Currently amended) The transgenic nematode of claim ~~[[35]]~~ 33, wherein the transgene comprises a gcs-1::gfp transgene.

37. (Cancelled)

38. (Currently amended) The transgenic nematode of claim ~~[[37]]~~ 33, wherein the transgene comprises a gsk-3::gfp transgene.